

## **Claims**

What is claimed is:

1. A method of facilitating speech recognition, said method comprising the steps of:

5 obtaining speech input data;

building a model for each feature of an original set of features;

ranking the features; and

building a model for each of a preselected number N of the ranked features.

10 2. The method according to Claim 1, wherein said step of building a model for each of a preselected number N of the ranked features comprises building a model for the top N ranked features.

3. The method according to Claim 1, further comprising the step of compiling a confusion matrix for each feature of the original set of features subsequent to said step of building a model for each feature of an original set of features.

15 4. The method according to Claim 3, wherein said step of compiling a confusion

matrix comprises computing a score for each feature based on the likelihood of its presence in a frame of the speech input data.

5. The method according to Claim 4, wherein said step of computing a score for each feature comprises computing a score as a log-likelihood ratio.

5        6. The method according to Claim 4, wherein said step of compiling a confusion matrix further comprises comparing each score of each feature with a threshold.

7. The method according to Claim 4, wherein said step of compiling a confusion matrix further comprises calculating mutual information between truth and labels for each feature.

10       8. The method according to Claim 7, wherein said ranking step comprises ranking the mutual information calculated in compiling the confusion matrix.

9. The method according to Claim 1, wherein said step of building a model for each feature of an original set of features comprises:

partitioning the speech input data in parallel, once for each feature; and

15       producing an observation vector.

10. The method according to Claim 9, wherein said step of building a model for each feature of an original set of features comprises:

partitioning data in parallel from the observation vector, once for each feature; and  
producing final observations.

5 11. The method according to Claim 1, wherein said step of building a model for each of a preselected number N of the ranked features comprises:

partitioning the speech input data in parallel, once for each feature; and  
producing an observation vector.

10 12. The method according to Claim 11, wherein said step of building a model for each of a preselected number N of the ranked features comprises:

partitioning data in parallel from the observation vector, once for each feature; and  
producing final observations.

13. An apparatus for facilitating speech recognition, said apparatus comprising:

an input medium which obtains speech input data;

a first model builder which builds a model for each feature of an original set of features;

a ranking arrangement which ranks the features; and

a second model builder which builds a model for each of a preselected number N  
5 of the ranked features.

14. The apparatus according to Claim 13, wherein said second model builder is adapted to build a model for the top N ranked features.

15. The apparatus according to Claim 13, further comprising a matrix compiler which compiles a confusion matrix for each feature of the original set of features  
10 subsequent to the building of a model for each feature of an original set of features.

16. The apparatus according to Claim 15, wherein said matrix compiler is adapted to compute a score for each feature based on the likelihood of its presence in a frame of the speech input data.

17. The apparatus according to Claim 16, wherein said matrix compiler is adapted  
15 to compute a score for each feature as a log-likelihood ratio.

18. The apparatus according to Claim 16, wherein said matrix compiler is further

adapted to compare each score of each feature with a threshold.

19. The apparatus according to Claim 16, wherein said matrix compiler is further adapted to calculate mutual information between truth and labels for each feature.

20. The apparatus according to Claim 19, wherein said ranking arrangement is  
5 adapted to rank the mutual information calculated in compiling the confusion matrix.

21. The apparatus according to Claim 13, wherein said first model builder is adapted to:

partition the speech input data in parallel, once for each feature; and

produce an observation vector.

10 22. The apparatus according to Claim 21, wherein said first model builder is further adapted to:

partition data in parallel from the observation vector, once for each feature; and

produce final observations.

23. The apparatus according to Claim 13, wherein said second model builder is  
15 adapted to:

partition the speech input data in parallel, once for each feature; and

produce an observation vector.

24. The apparatus according to Claim 23, wherein said second model builder is further adapted to:

5        partition data in parallel from the observation vector, once for each feature; and  
  
      produce final observations.

25. A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for speech recognition, said method comprising the steps of:

10        obtaining speech input data;  
  
      building a model for each feature of an original set of features;  
  
      ranking the features; and  
  
      building a model for each of a preselected number N of the ranked features.